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(71) Applicants and

(72) Inventors: WALTERS, Richard, E. [US/US]; 6248 Wild Swan Way, Columbia, MD 21045 (US). KING, Alan, D. [US/US]; 13165 Deanmar Drive, Highland, MD 20777 (US).

(74) Agent: TOWSEND, Marvin, S.; 8 Grovepoint Court, Rockville, MD 20854 (US).

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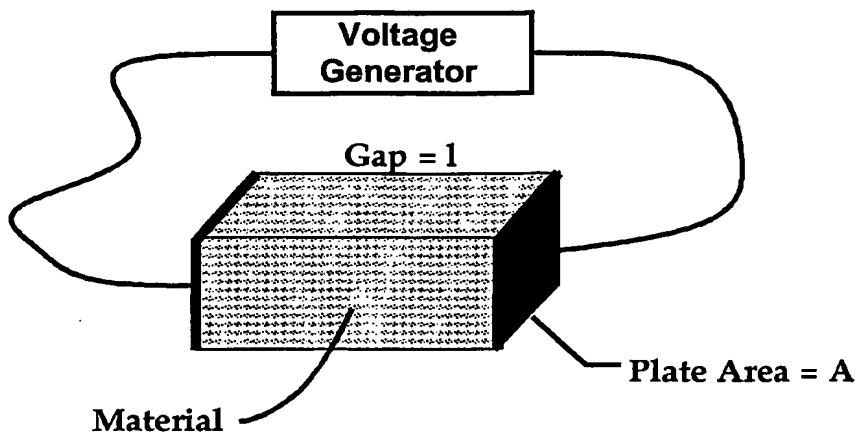
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(54) Title: LARGE VOLUME EX VIVO ELECTROPORATION METHOD



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(57) Abstract: An object of the invention is to provide an electroporation method for treating vesicles with exogenous material for insertion of the exogenous material into the vesicles which includes the steps of: a. retaining a suspension of the vesicles and the exogenous material in a treatment volume in a chamber which includes electrodes, wherein the chamber has a geometric factor ( $\text{cm}^{-1}$ ) defined by the quotient of the electrode gap squared ( $\text{cm}^2$ ) divided by the chamber volume ( $\text{cm}^3$ ), wherein the geometric factor is less than or equal to  $0.1 \text{ cm}^{-1}$ , wherein the suspension of the vesicles and the exogenous material is in a medium which is adjusted such that the medium has conductivity in a range spanning 0.01 to 1.0 millisiemens, wherein the suspension is enclosed in the chamber during treatment, and b. treating the suspension enclosed in the chamber with one or more pulsed electric fields. With the method, the treatment volume of the suspension is scalable, and the time of treatment of the vesicles in the chamber is substantially uniform.